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Pregnancy Outcome in Women with Advanced Maternal Aged Over 35 Years, Riyadh, Saudi Arabia 2019

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Abstract **Background:** The rate of women who are delaying their pregnancy and childbirth to their 4th decade of life appears to be increasing recently, and this may be because of various reasons such as education and delayed marriage. **Objective:** Thus, the study aims to assess maternal and fetal outcomes in all pregnant women with advanced maternal age **Methods:** This is a retrospective cohort study conducted in the National Guard Hospital (NGH) in Riyadh, Saudi Arabia. The delivery records were searched for pregnant women in the designated hospital between the period of January 1st, 2019, to 31st March 2019. 1257 patients in total were included according to the inclusion criteria **Result:** In this study, we collected data for 1257 pregnancies where the prevalence of mothers older than 30 years old was 25.2% (N = 253). Moreover, older women (>35) had a higher risk for needing CS than younger participants (RR = 1.78, 95% CI: 1.34: 2.36, p = 0.001) where the prevalence of CS in the older group was 41.5% compared with 28.5 5 of the younger group. **Conclusion:** Advanced maternal age is associated with a range of adverse pregnancy and fetal outcomes.

Key Words Advanced Maternal Age, Fetal Outcome, Maternal Complication, National Guard Hospital (Ngh) in Riyadh, Vaginal Delivery

INTRODUCTION

The rate of women who are delaying their pregnancy and childbirth to their 4th decade of life appears to be increasing recently and this may be because of various reasons such as education and delayed marriage [1]. For instance, some of them experience pregnancy unwillingly because of the inappropriate use of contraceptive methods [2]. Advanced Maternal (AMA) is defined as the state of being pregnant over the age of 35 years. Pregnant lady with (AMA) has an increased risk of maternal and fetal morbidities significantly [3]. Consequently, AMA considered a risk factor that leads to various pregnancy adverse consequences. The relationship between (AMA) and the risk of spontaneous miscarriage and chromosomal abnormalities has been described in previous studies sufficiently [4-5]. Globally, the demographic changes of childbearing age have shown a noticeable shift in the previous decades. In USA, women aged 35–39 had a birth ratio known as 49.3% in 2013, and 51% births per1000 women in 2014. Also, women who aged 20-24 had a birth rate of 80.7% in 2013, and in 2014, it got decreased to 79%, believing that this ratio was as high as 115. 1 in 1980 [3]. In Japan, the birth rate to women aged 35 has increased from 8.6% in 1990 to 25.9% in 2012 [6]. Many other developed countries, China for example, have been found to have similar birth rates [7-10]. In China, women who aged 35 to 39 were found to have a birth rate of 8.65% in 2004, which increased to 17.04% in 2014. Similarly, women aged 40–44 had a birth rate that rose from 1.77% to 3.96%. In the other hand, the birth rate of women aged 25–29 decreased from 102.44% to 93.62% [11]. The ratio of pregnancies in advanced maternal age was about 31% of total pregnancies in 2016 [12]. For the current and past decades. The age of a woman when she becomes pregnant for the first time has been increasingly elevated. Many

factors such as education levels, relationship status, and financial problems, play major roles in this issue [13]. For these reasons, a lot of women in Europe and USA decided to postpone their parenthood in order to improve their education level, and to pursue a career of work and better social and financial status [14].

Thus, the study aims to assess maternal and fetal outcomes in all pregnant women who delivered at 20 weeks or beyond and aged 35 years or older in Obstetrics and Gynecology Department at National Guard Hospital in Riyadh, Saudi Arabia. In addition to reporting this study's findings, any contributing factors that affected the outcomes were measured.

METHODS

Study design

This is a retrospective cohort study, conducted in National Guard Hospital (NGH) in Riyadh, Saudi Arabia. The delivery records were searched for the pregnant women in the designated hospital between the period of January 1st, 2019, to 31st March 2019. 1257 patients in total. STROBE Checklist was used.

Inclusion criteria

Any pregnant women who delivered after the 20th week of gestation, and delivered at the obstetric department of NGH, Riyadh.

Papulation

Pregnant women beyond age of 35 years and delivered in National Guard Hospital (NGH) in Riyadh, Saudi Arabia between the period of January 1st, 2019, to 31st March 2019.

Statistics

We used IBM SPSS program 25 edition to analyze the data. The data cleaning process included several steps in order to mold the extracted data for the statistical analysis purposes. The gestational age was rounded to the nearest completed week [15]. When we recorded the twin babies, we recorder only the heaviest baby, APGAR, and pH scores for healthiest baby. Moreover, ABGAR score was furtherly categorized into 7–10 as reassuring, a score of 4–6 as moderately abnormal, and a score of 0–3 as severely abnormal [16]. The parity was classified into two groups, where the first included the nullipara (women who never delivered before) and multipara (women with previous history of delivery). The term was defined as term (≥37 weeks of gestation) and preterm (<37 weeks of gestation) [17]. Type of delivery was initially registered into spontaneous vaginal delivery (SVD), cesarean section (CS), ventouse, breech, and forceps. But due to the scarcity of patients falling in the later groups, they were grouped into only two; vaginal delivery (VD) and cesarean section (CS). Lastly baby weight was converted from a continuous variable into a categorical variable as follows: normal birth weight (2501 – 4000 g), low birth weight (≤2500g), and high birth weight (≥4001g) [18].

Ethical consideration

Due the nature of this study, a retrospective cohort, informed consent per patient was not a requirement.

RESULTS

In this study, we collected data for 1257 pregnancies where the prevalence of mothers older than 30 years old was 25.2% (N = 253). The mean age of the total sample was 29.61 years old (SD = 5.7), while the mean age of mothers younger and older than 35 years old was 27.45 (SD = 4.19) and 38.03 (SD = 2.57) years. Moreover, the prevalence of obesity was higher in women aged > 35 years (63.2%) compared with 45.2% of the younger group (p = 0.002). Furthermore, most of the mother older than 35 years were multiparous (96.0%) compared with 68.8% in the younger group (p = 0.001). Considering type of delivery, we found that 68.9% of the total sample had vaginal delivery (Table 1).

Considering complications during pregnancy and postpartum, it was found that the older women had higher risk for developing gestational GDM by 3.49 times than younger women significantly where prevalence of gestational GDM in older group was 24.9% compared with 8.7% of younger women (RR = 3.49, 95% CI: 2.43- 5.01, p = 0.0001). Placenta previa is another complication that had increased incidence among women older than 35 years significantly where older women had eight-time higher risk for developing placenta previa (RR = 8.05, 95% CI = 1.46-44.19, p = 0.016) (Table 2).

Considering fetal outcomes, we found that 10.6% of the total newborns were preterm. Women with older age (>35)

Table 1: Baseline Characteristics of Patients by Maternal Age

Variable	Total (N = 1257)	<35 years (n = 1004)	≥35 years (n = 253)	p-value
Age (Mean±SD)	29.61±5.7	27.45±4.19	38.03±2.57	0.000*
Body Mass Index (N = 772)				
Normal	106 (13.7%)	88 (16.9%)	18 (7.2%)	0.002*
Underweight	4 (0.5%)	3 (0.6%)	1 (0.4%)	
Overweight	268 (34.7%)	195 (37.4%)	73 (29.2%)	
Obese	394 (51.0%)	236 (45.2%)	158 (63.2%)	
Parity				
Nulliparous	323 (25.7%)	313 (31.2%)	10 (4.0%)	0.001*
Multiparous	933 (74.3%)	690 (68.8%)	243 (96.0%)	
Type of Delivery				
Vaginal Delivery	866 (68.9%)	718 (71.5%)	148 (58.5%)	0.001*
Cesarean Section	391 (31.1%)	286 (28.5%)	105 (41.5%)	

Table 2: Pregnancy Outcomes by Maternal Age (<35 vs ≥35 Years)

Outcome	Total (N = 1257)	<35 years (n = 1004)	≥35 years (n = 253)	p-value	RR	95% CI
Gestational Hypertension	11 (0.9%)	7 (0.7%)	4 (1.6%)	0.189	2.28	0.66–7.87
Preeclampsia	22 (1.8%)	15 (1.5%)	7 (2.8%)	0.174	1.87	0.75–4.65
Gestational Diabetes (GDM)	150 (11.9%)	87 (8.7%)	63 (24.9%)	<0.001*	3.49	2.43–5.01
Placenta Previa	6 (0.5%)	2 (0.2%)	4 (1.6%)	0.016*	8.05	1.46–44.19
Induction of Labor	273 (21.7%)	227 (22.6%)	46 (18.2%)	0.127	0.76	0.53–1.08
Postpartum Hemorrhage (PPH)	65 (5.2%)	52 (5.2%)	13 (5.1%)	0.979	0.99	0.53–1.85

Table 3: Fetal Outcomes in Relation to Maternal Age (<35 vs ≥35)

Outcome	<35 years	≥35 years	p-value	Risk Ratio (RR)	95% CI
Preterm Birth	9.6%	14.6%	0.020*	1.62	1.07–2.43
Low Birth Weight	12.1%	19.4%	0.001*	1.80	1.25–2.61
High Birth Weight	1.9%	4.0%	0.032*	2.34	1.07–5.12
HDU Admission	0.4%	3.2%	0.001*	8.45	2.22–32.11
NICU Admission	7.8%	18.2%	<0.001*	2.64	1.76–3.95
Severely Abnormal APGAR	0.8%	2.4%	0.040*	3.02	1.04–8.79

had significantly higher risk for having preterm newborn by 1.62 times where the prevalence of preterm infants among older women was 14.6% compared with 9.6% of younger group (RR = 1.62, 95% CI: 1.07- 2.43, p = 0.02). Moreover, older pregnant women had higher risk for having baby with low birth weight by 1.8 times (RR = 1.80, 95% CI: 1.25- 2.61, p = 0.001) and high birth weight by 2.34 times (RR = 2.34, 95% CI: 1.07- 5.12, p = 0.032). Newborns of older women had higher risk for NICU (RR = 2.64, 95% CI: 1.76- 3.95, P = 0.0001) and HDU admission (RR = 8.45, 95% CI = 2.22- 32.11, p = 0.001) than those of younger women (Table 3).

DISCUSSION

The rate of old women aged over 35 years among pregnant women in this study was 25.2% which is similar to the results of some Saudi Arabian studies. In a study conducted by Fayed et al among pregnant women in Al Riyadh region, Saudi Arabia, the authors reported a prevalence of 23% [19]. In another study conducted among pregnant women in Jeddah, the prevalence of advanced maternal age was 25.6% [20] However, it was higher than reported in the northern region of Saudi Arabia, where the prevalence of advanced maternal age was 17% [21]. Moreover, the result of this study was similar to the results of another study conducted in USA [22]. However, this prevalence is higher than reported in some previous studies conducted in different countries, including UK (18.2%- 12.6%) [23], China (17.2%) [24] and South Korea (19.5%) [25]. However, most of the delayed childbearing according to previous studies is due to improving access to education, career opportunities, assisted reproductive techniques, contraception [8]. Only 4.0% of women aged over 35 years were pregnant of the first time. This finding is in agreement with the results of Fayed et al, who found that 3.4% of their women over 35 years old were primigravida [26]. This indicates that most of women in Saudi Arabia decide to have a pregnancy after the age of 35 years because of completing their family and not because of an intended delay.

CONCLUSIONS

Advanced maternal age is associated with a range of adverse pregnancy outcomes. These risks are independent of parity and remain after adjusting for the ameliorating effects of higher socioeconomic status. The data from this large contemporary cohort will be of interest to healthcare providers and women and will facilitate evidence-based counselling of older expectant mothers.

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Conflict of interests

The authors declare no conflict of interest.

Data and Materials Availability

All data associated with this study are presented in the paper.

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